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Including SOUTHERN FLIGHT and MODERN AIRPORTS

CONVAIR TURBOLINER

Allison Powers FIRST FLIGHT of First Turbo-Prop Transport

THE first U.S. turbine transport is now a reality and is under test. It was made possible through the private enterprise and initiative of the Allison Division of General Motors. First flight was completed December 29, 1950 with an Allison-owned Convair Turbo-Liner equipped with two Allison "501" Turbo-Prop engines.

This investment in the future of Turbo-Prop power is the result of Allison determination to speed the development of turbine transports in this country. The Allison "501" Turbo-Prop engines, developed under sponsorship of the U.S. Navy, are the most advanced Turbo-Prop engines in the U.S. today. They lead the world in high power for their low weight. They will make possible smoother, more economical transports to carry increased loads of passengers and freight.

Allison will prove these advantages in an extended flight test program on the Turbo-Liner. The results —to be made available to the military services, aircraft manufacturers and commercial air lines—will prove the safe and dependable operation of Turbo-Prop power.

Thus the United States will continue its world leadership in transport aircraft.

DIVISION OF GM GENERAL MOTORS INDIANAPOLIS, INDIANA

Allison

Builders of the Famous J33 Centrifugal Flow and J35 Axial Flow Turbo-Jets Now Serving the Military Everywhere.

TRI-PACER

RUGGED NOSE WHEEL

No "stubbing your toe" with the Tri-Pacer. Over 4000 landings and 3000 miles of gruelling taxiing—much of it on a special rough obstacle course—went into testing the Tri-Pacer's nose wheel, which is same size as main wheels. This testing is the equivalent of more than 15 years of normal use.

UTILITY with ECONOMY

For business and farm, the Tri-Pacer is as useful as it is easy to fly. It will carry four people two miles a minute at less cost than for bus fare, or, with rear seat removed, it can carry a quarter-ton of cargo, easily loaded through convenient rear door.

NOW THE FAMOUS PIPER PACER
WITH TRICYCLE GEAR FOR FLYING EASE

Here's the biggest news in private flying since the first Cub flew 20 years ago. Piper, leading builder of business, farm and personal planes, now brings you the sensational new Tri-Pacer, which makes flying so simple an eight-year-old girl learned to take off and land in six short lessons!

Yes, here's the Piper Pacer, famous for its speed, range, comfort and economy, now available with a rugged tricycle landing gear which makes flying easier for everyone.

Steerable nose wheel makes ground-handling easier than steering a car. Interconnected rudder and ailerons let you fly with wheel alone or feet alone! Yet you have fully operating rudder, aileron and elevator when you want them.

You get all this in addition to the proven features of the Piper Pacer, which make it the largest selling four-passenger plane built today...separate front and rear doors, nonflammable, longer lasting Duraclad finish, roomy cabin with added sound proofing...the incomparably reliable 125 hp Lycoming engine...and over 120 mph cruising speed. Write for brochure. Dept. F-2.

PIPER
AIRCRAFT CORP.
LOCK HAVEN, PA., U.S.A.

MODEL PA-20 ***The Pacer is available, too, with regular landing gear. In both Pacers you get the wonderful solid big airplane feel which makes long flights comfortable and pleasant. Be sure to fly the new 1951 Pacers and see for yourself why more people buy Piper than any other business or personal plane.***

Centrifugal Flow and J35 Axial Flow Turbo-Jets
Now Serving the Military Everywhere.

FIRST PHOTO OF AIR COORDINATING COMMITTEE shows members in recent Washington session. Left to right: J. F. Floberg, Navy; J. W. Jones, Budget Bureau; T. W. S. Davis, Commerce; J. P. Barringer, State Department; C. O. Cary, ACC executive secretary; D. W. Rentzel, CAB and ACC chairman; Capt. H. C. Moore, Treasury; J. A. McCone, USAF; Dan A. Kimball, Navy; R. S. Burgess, Post Office. Not present were Members E. H. Foley, Treasury; J. E. Webb, State Department; J. M. Redding, Post Office, and R. J. Smith, NSRB. —(CAB Photo.)

AIR Report
Significant Trends and News

PRIORITIES AND ALLOCATIONS for carrier aircraft and parts and equipment for them are now being issued by CAA under NPA authorization, and an "Office of Aviation Defense Requirements" has been established within CAA to handle them. G. R. Gaillard, CAA standardization coordinator, heads up the new office.

MILITARY ORDERS for aircraft last month began pouring into major factories, with over $10 billion in funds for fiscal 1951 procurement. Almost $7 billion of that is for USAF, remainder for Navy air. Production is to be tripled during next 12 months.

BIG PRODUCERS AND PLANES ORDERED are as follows: Boeing (B-47, B-50, C-97 for USAF), Chance Vought (F7U for Navy), Convair (B-36, T-29 for USAF; R3Y for Navy), Douglas (C-124, C-118 for USAF; AD, R6D, R4D for Navy), Fairchild (C-119 for USAF; R4Q for Navy), Grumman (F9F, F10F, AFS, AFW for Navy), Lockheed (F-94C, T-33, C-121 for USAF; P2V, PO-2W, TO-2 and R7O for Navy), Glenn L. Martin (P5M, P4M for Navy), McDonnell (F2H for Navy), North American, (F-86E, T-28 for USAF; AJ-1 for Navy), Republic (F-84F for USAF).

MAJOR LICENSEES AND WHAT THEY'LL BUILD include Kaiser-Frazer (Fairchild C-119 at Willow Run), General Motors (Republic F-84F at Kansas City), Douglas (Boeing B-47 at Tulsa), Lockheed (unnamed bomber at Marietta, Ga.), Chrysler (Pratt & Whitney J48 at Detroit) and Ford (Pratt & Whitney R-4360 at Chicago).

95 TO 100 COMBAT GROUPS and 971,000 personnel by 1952 are now planned by USAF, until recently at 48-group strength. . . . **MORE AIR NATIONAL GUARD AND RESERVE UNITS** are being called up. . . . **REACTIVATION OF AIR**

(Continued on page 20)

FLIGHT MAGAZINE
Including SOUTHERN FLIGHT and MODERN AIRPORTS

FEBRUARY, 1951 VOL. 35, No. 2

COVER: First turbo-prop transport to fly in the U. S. is the Convair Turboliner, shown on its first flight from Lindbergh Field, San Diego, Calif., Dec. 29. It is a research version of the familiar Convair airliner, ordered by Allison Division of General Motors to test installation of their turbine engines and Aeroproducts propellers. The Turboliner is powered by two 2,750-hp. Allison 501 turbo-prop engines (T38 is military model designation), has a 41,790-lb. gross weight and 1,550-gal. fuel capacity. General Motors will flight-test the airplane in its own aviation department and then operate it experimentally in airline and military transport projects as the basis for future utilization.
—(Convair Photo.)

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GEORGE E. HADDAWAY, Editor-Publisher; TOM ASHLEY, Managing Editor; FRED N. STONES, JR., Business Manager; *West Coast Representatives*, TED SCHELL and STAN BROWN, 1200 Rives-Strong Bldg., Tel. Vandike 8921, Los Angeles.

FLIGHT MAGAZINE, February, 1951, Vol. 35, No. 2. Published monthly. Publication office, P. O. Box 750 (1901 McKinney Ave.), Dallas 1, Texas. Price 35c single copy. Subscription rates: United States, one year $3.00; two years, $4.00; three years, $5.00. Established February, 1934. Entered as second-class matter at the Post Office, Dallas, under the act of March 3, 1879. Copyright, 1951, by Air Review Publishing Corporation.

What Next? they asked in 1908 . . .

Many times that year, Glenn Curtiss and J. A. D. McCurdy flew the pusher *June Bug*. An 8 cylinder air-cooled engine developing 30 horsepower got *June Bug* off the ground in 150 feet. Rate of climb was around 250 feet per minute. Mr. McCurdy reported recently that *June Bug* maneuvered well with lateral control effected by ailerons invented and first used by *June Bug's* sponsors, the Aerial Experiment Association.

What Next? they're asking in 1951 . .

Enemy interception is a tough assignment. Your gun platform needs tremendous rate of climb, extreme speeds and maneuverability. And these the Republic XF-91 provides... thanks to advanced aerodynamic design with both jet and rocket power.

Providing fuel for efficient thrust in all ranges of flight is a Phillips specialty. Already Phillips aviation manufacturing facilities have met rigid specifications for much new jet and turbo-prop fuel.

When you want dependable aviation products for sub-sonic piston engines, trans-sonic turbo-props or jets of any speed, call on Phillips first. The Aviation Department, Phillips Petroleum Company, Bartlesville, Oklahoma.

Phillips 66

AVIATION PRODUCTS

FLIGHT MAGAZINE, February, 1951, Vol. 35, No. 2. Published monthly. Publication office, P. O. Box 750 (1901 McKinney Ave.), Dallas 1, Texas. Price 35c single copy. Subscription rates: United States, one year $3.00; two years, $4.00; three years, $5.00. Established February, 1934. Entered as second-class matter at the Post Office, Dallas, under the act of March 3, 1879. Copyright, 1951, by Air Review Publishing Corporation.

STRENGTHENING YOUR SUPPLY LINE

The shortest distance between you and the industry's leading parts and supply manufacturers is a straight line through the Southwest Airmotive Sales Department.

This SAC supply line is your surest safeguard against costly shortages in the present national emergency. To further strengthen it in the uncertain days ahead, the Sales Department has just been relocated, expanded, and improved. It is bigger and better than ever — and your best bet for finding the critical things you need! And remember, too, that with the factory-new items bought at SAC you get a REAL GUARANTEE.

Down this vital supply line to YOU pass the products of ARC, Bendix Aviation Corp. (Bendix Products Division, Eclipse-Pioneer, Scintilla), BG, Champion, Flightex, Glidden, B. F. Goodrich, Gould Battery Co., Hamilton-Standard, Lycoming, Pratt & Whitney, Willard, Wright Aeronautical, RCA, and many others.

Make a personal inspection of our new sales building. Discuss your supply problems — real and anticipated — with us and let us help you reach a solution.

30,000 different part types (totaling a half-million items) in stock.

Shipping and receiving is fast, expert . . your assurance of getting merchandise in perfect condition.

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Southwest Airmotive Co.

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Over-the-counter sales room is equipped for complete customer service.

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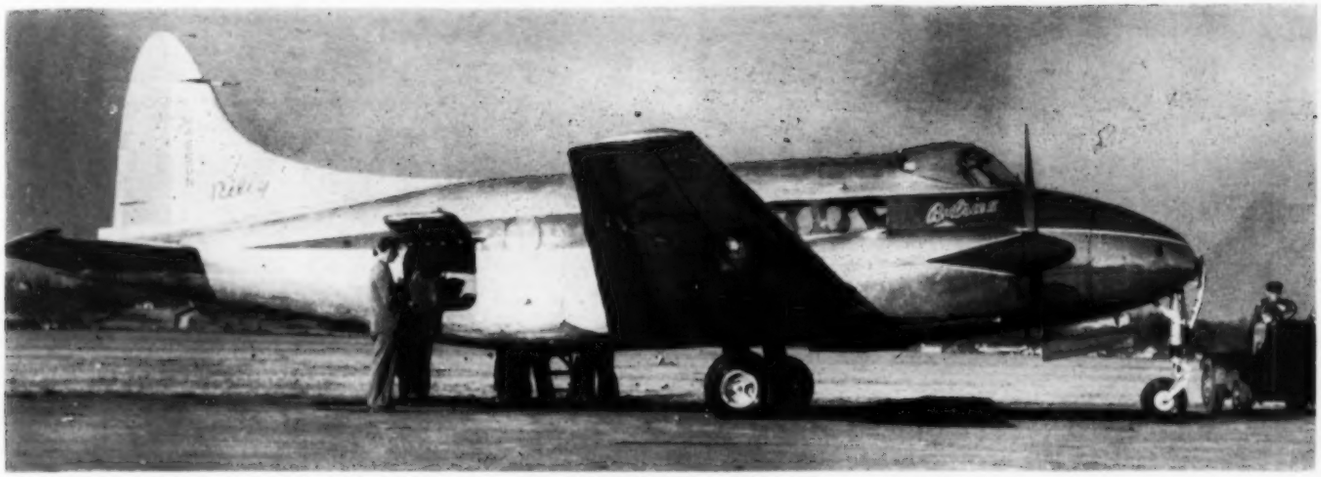
How to get there . . it's on Roanoke St., and also near concrete plane ramp.



You'll Love the Dove

Modernize Your Travel with Superior Performance

De Havilland Dove

FOR FASTER, MORE ECONOMICAL, MORE COMFORTABLE multi-engine travel, the world-famous de Havilland Dove is now licensed by CAA and is available and serviced in the U. S. through Jack Riley Aircraft Sales, Distributor.

Hundreds of business executives and pilots on demonstration flights have admired the Dove's superior performance and postwar design features. You, too, will want to experience the Dove's high standards of twin performance.

Unrivalled flexibility for maximum utilization is shown below in alternative range, speed and loading conditions:

Range, Speed, and Payload for All Your Travel Needs

NOTE: Fuel consumption: 39 gph. at 200 mph. TAS; 32 gph. at 180 mph. TAS; 27 gph. at 165 mph. TAS. All trips and loads shown include pilot, co-pilot and full oil tanks in empty weight (6,310 lbs.).

	TAS mph.	Elapsed Time	Fuel Plus 40-min. Reserve	No. of Passengers at 170 lbs.	Potential Baggage Load, Lbs.	Total Gross Wt., Lbs.
300 Mi. Trip	200	1:30	504 lbs.	6	666	8,500
	180	1:40	447 lbs.	6	723	8,500
	165	1:49	405 lbs.	6	761	8,500
500 Mi. Trip	200	2:30	738 lbs.	6	489	8,500
	180	2:47	660 lbs.	6	510	8,500
	165	3:01	600 lbs.	6	570	8,500
700 Mi. Trip	200	3:30	972 lbs.	6	234	8,500
	180	3:52	864 lbs.	6	306	8,500
	165	4:13	786 lbs.	6	384	8,500
900 Mi. Trip	200	4:30	1200 lbs.	5	176	8,500
	180	5:00	1020 lbs.	6	150	8,500
	165	5:26	984 lbs.	6	186	8,500
1240 Mi. Trip	200	6:10	1590 lbs.	3	90	8,500
1400 Mi. Trip	180	7:49	1590 lbs. (32 min.)	3	90	8,500
1500 Mi. Trip	165	9:05	1578 lbs.	3	102	8,500

THE DE HAVILLAND DOVE ANSWERS THE NEED FOR efficient utilization — *the Dove is unexcelled in the performance range shown.*

Years ahead of other aircraft of comparable performance, the Dove was designed for ease of maintenance and maximum annual usage. Over 300 Doves are in service. Volume production assures immediate deliveries, with complete U. S. sales and servicing. Write us today for particulars.

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SHREVEPORT, LOUISIANA

Just among ourselves

EDITORIALS

CIVIL AVIATION PROCUREMENT POLICY

THE Air Coordinating Committee, composed of representatives from every Federal agency concerned with aeronautics, including the military services, has approved the establishment of a long-range procedure to provide U. S. civil aviation with necessary aircraft and replacement parts.

Although it is not entirely clear just how the system will work to assure a flow of essential airplanes and parts, the Secretary of Commerce has designated the following "claimant" agencies:

1. The Civil Aeronautics Administration for all non-airline civil aircraft and aeronautical communication facilities;

2. The Civil Aeronautics Board for all aircraft used in air carrier operations;

3. The Economic Cooperation Administration for all foreign aviation within the Marshall Plan countries;

4. The Office of International Trade (Department of Commerce) for all foreign aviation outside the Marshall Plan countries.

It is proposed that these four claimant agencies will submit their requirements to a staff organized within the CAA. These requirements will then be submitted to the Air Coordinating Committee which has the responsibility of reviewing the civil requirements and recommending to the National Production Authority one complete program covering all essential civil aviation needs.

After the ACC sends its recommendations to the NPA for authorizing defense orders or directives necessary to carry out the program, the NPA then forwards its approved action to the Munitions Board, which will integrate the civil program with the military program and handle the necessary administration and operation incident to the execution and the claiming of materials for the entire aircraft production program through its established organization.

It is vehemently hoped that they won't let any grass grow under their feet in getting down to brass tacks. Right now many suppliers are refusing to ship certain items without DO ratings and numbered military contracts. The creeping paralysis will soon develop into a complete standstill with many essential airplanes being grounded for lack of parts and hardware. Sixty-day delays in shipping dates are being moved up six months or longer. Every time a new DO sale is made by a manufacturer or supplier, civilian orders without DO ratings are pushed farther back into the files.

Both the chairman of the Civil Aeronautics Board, who is also chairman of the Air Coordinating Committee, and the administrator of Civil Aeronautics have gone on record favoring the expansion rather than the contraction of essential civil aviation activities. They have done and no doubt will continue to do everything in their power to convince the maze of Washington defense agencies that the pitifully small amount of materials needed for essential civil aviation operations isn't a drop in the bucket compared with the terrific tonnages going into the voracious military machine.

There is room for skepticism, however, when you consider that civil aviation requirements originate with the four claimant agencies, then go to a special staff within CAA, thence to the Air Coordinating Committee, to the National Production Authority and finally to the Munitions Board. At first blush it appears to us the air carrier needing some brake discs or radio tubes and the executive owner in need of a magneto part or a carburetor are in for some long waiting if the suppliers' shelves are empty.

Civil aviation is either essential or not. Most everybody agrees that it is essential. As the old darkey asked, "is you is or is you ain't?" Would it not be more realistic to allocate a definite percentage of 1950 production to be allowed in 1951, place a limit on the size of inventories our industry can carry, and issue a DO rating?

There's little doubt but that a CMP system will be worked out eventually for all industries. But civil aviation is threatened with annihilation while other industries prosper. They are at peak production—automobiles, electrical appliances—most any item you can name. Civil aviation is not at peak production. Cut autos or television sets or refrigerators in half and they will still be doing a booming business. Cut civil aviation and you cut the floor out from under us.

We fear that the cumbersome system now proposed will bog down and defeat the very objective they are trying to reach—preservation of essential civil aviation activities as a vital auxiliary to the military effort. The trouble lies, as we see it, in the National Production Authority. They are adamant against a DO rating, which alone will work under the present system.

Meanwhile, all the agencies involved should get together and without further delay issue a simple directive on how the proposed system will work and what suppliers, airplane owners and operators must do to get planes, parts and materials—NOW! ★ ★ ★

Airmen's Calendar

Feb. 9-11 — Texas Flying Farmers Annual Convention, Houston, Texas.

Feb. 12—Louisiana Aviation Conference, Washington-Youree Hotel, Shreveport.

Feb. 12-14—Ohio Agricultural Aviation Conference, Ohio State University, Columbus, Ohio.

Feb. 14-28—Annual Aviation Fiesta, Orlando, Fla.

Feb. 19-20—3rd National Agricultural Aviation Conference, Peabody Hotel, Memphis.

Mar. 12-13—Short Course, Aerial Equipment in Agriculture, Purdue University, West Lafayette, Indiana.

Mar. 16—6th Annual Flight Propulsion Meeting, Institute of Aeronautical Sciences, Hotel Carter, Cleveland, Ohio.

• Many J. D. Reed Company customers take the high quality service and maintenance they receive for granted. We are proud they consider our facilities and technical know-how as something consistent and thoroughly dependable. This confidence has been earned by our earnest effort to back up every work order with long trouble-free operation of each individual airplane, *our form of Insurance.*

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The Birdmen's Perch

We've got our candidate for World's No. 1 Optimist!

He's the guy who figures his plane's electrical system will take care of itself. Yes sir—that joker will spend all day Saturday polishing up his paint job, but forget all about the fine-gauge wires that carry the juice from the battery or generator!

True, exposed wiring is usually insulated and fairly durable, but it won't last forever. Wiring, the best you can get, does break and does short! Beyond the usual dangers of fire from a short circuit, a broken wire can kill your prop deader than a herring!

Naturally, you don't want circuit failure in the air. The only answer is to learn proper circuit maintenance and practice it . . . on the ground!

A shiny ship is one thing—but remember, a broken wire can turn it into nothing more than a shiny pile of junk! Check every inch of electrical wiring on your ship *regularly!*

P-S-S-T, FERDIE, THE SCRIPT!

Attention, all aviators! Does your engine clank and scrape? Are the valves nervous, the rings sullen and irritable?

Then, Boys and Girls, those engines need Gulfpride

Aviation Oil—Series D—and no mistake! It's the finest detergent dispersant oil for horizontally opposed engines there is!

To wit, Gulfpride Aviation Oil—Series D—is the only aviation oil put through Gulf's exclusive Alchlor process to remove extra carbon and sludge formers!

Get hep and get engine-happy! Use Gulfpride Aviation Oil—Series D—exclusively and increase those periods between overhauls up to 100%.

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AVIATION PRODUCTS

AT LOW ALTITUDES, WATCH OUT FOR STRUNG WIRES, OR ...
YOU MIGHT BECOME AMMUNITION FOR A SLINGSHOT, AND...
WASTE A TANKFUL OF THAT SUPERTERRIFIC GULF AVIATION GASOLINE!

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We feel that our new neighbors will find Fort Worth
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DIVISION OF AIR ACCESSORIES, INC.
Fort Worth, Texas

"It is my conviction that we find ourselves in these unhappy circumstances as a consequence of honest people trying to beat an international sharper at his own game instead of letting him have it in good old Western style when he is caught cheating."

WAR—

WE are losing a war *without firing a shot*. We are losing it because we do not seem to understand that the character of international conflict has completely changed since the close of World War II.

Psychological warfare is now the most potent weapon in the arsenal of the totalitarians. Although Hitler gave us a first-class course in how this weapon can be used, we have chosen to ignore it. That we should not choose to use it is understandable. *That we do not recognize it in the hands of Russia is inexcusable.*

Military arms are essential to this kind of warfare, not necessarily for use but to brandish under the noses of statesmen and politicians fearful of their own position or the safety of their country. That these arms may be inferior or lacking in substance does not appear to be important so long as they are there in great numbers.

Russia has retained a huge army primarily for psychological purposes and the control of her own and subjugated peoples. Reliable estimates indicate she can muster a ground force of 3,750,000 men. The Atlantic Pact nations will do well to raise 2,000,000. *So what?*

Would it not be perfectly stupid to enter a tiger's cage relying upon your teeth and finger nails, simply because the tiger has only teeth and claws? Yet that appears to be exactly the attitude we and other nations are assuming.

We have become so hypnotized by the colossal manpower available to the Russians and their Asiatic cousins, we think we must match them man for man and weapon for weapon in a conflict of their own choosing: *A psychological victory for Russia of the first magnitude!*

In a contest between ground forces, Western civilization is certain to take a licking again. It is impossible for us to stoop to the immorality inherent in total disregard for human life and dignity. Eastern materialism is no more inhibited in this regard than the tiger.

On the other hand, we are just as certain to control the situation if we but follow the example of experts in tiger handling and *take a chair, pistol and whip into the cage with us.*

As with the tiger, the mere attitude of a willingness to fight with weapons he does not understand and that will hurt him when he steps out of line would be most effective in countering the Russian confidence in, and our fear of, superior ground forces. *Fear of this obviously superior force* and all the unknown forces that *may* be back of the iron curtain is the secret of Russian psychological success.

Russian Tactics Expose Weakness

FEAR of the unknown is a universal weakness of mankind. The Oriental has played upon it for thousands of years. *Cunning, indirection, cynicism* are favored as naturally as the Occidental prefers an immediate, direct settlement of differences.

The Oriental employs his approach as a form of mental and psychological torture to wear down his opponent to the point where, in exasperation, he gives up or makes a mistake that may be seized upon to advantage. In this process the bait of apparent success is occasionally thrown out to the Occidental who, in his desire

R—Russian Style

By Maj. Gen. Hugh J. Knerr, USAF Ret.

to believe in the integrity of his fellow man, grabs it as proof that his opponent has been misunderstood. In spite of the rude awakening that inevitably follows, the same thing happens over and over again. Think back ten years, or read tomorrow's newspaper.

This process of leading from weakness is as simple and effective as at cards. The same necessity exists for concealing what you do not have. The iron curtain is as necessary to Russia as the vest and sleeves are to the card sharp.

It is my conviction that we find ourselves in these unhappy circumstances *as a consequence of honest people trying to beat an international sharper at his own game* instead of letting him have it in good old Western style when he is caught cheating.

It is strange how this myth of an all-powerful Russia has grown up in the mind of the average American, who normally is not too gullible. Or is it? This business of Russia over-running Europe in three weeks and then putting it to work producing weapons for our defeat is a neat bit of psychological propaganda not entirely of Russian origin. *That sort of stupidity is the product of considerable intelligence.*

Certainly Russia can get to the channel in 90 days! Napoleon made the Volga in less time than that. Russia is not going to make the same mistake in reverse, knowing full well that her real objective lies 3,000 miles beyond.

To win, Russia knows she must devise means for cancelling the ability of the Atlantic Bloc to produce five times more steel, three times more coal, seven times more electric power and ten times more oil than she can. The key to the riddle facing Russia is the U. S.—

It's time we assumed sober leadership of mankind and stopped cringing in fear.

Let us make clear our intention to make maximum use of our superior industrial, air and naval power instead of having our army used as a pawn.

—Why expose her front to war and her back to millions of desperate saboteurs among her own and subjugated populations?

—Why not drive wedges in the Western wall and allow the frost of suspicion to work for her?

—Why not create a rift between England and France over the industrial resources of the Ruhr?

—Why not founder the United States and England on the shoals of Socialism?

—Why not frighten us into dissipating our power among nations too cynical or decadent to fight for an ideal?

Just stop and think over what Russia and her

(Continued on page 27)

Gipsy Queen 70-4 supercharged engines rated at 345 hp. for take-off, 3-bladed feathering and reversing Hydromatic propellers, tricycle landing gear and bubble canopy are emphasized in this portrait of the first de Havilland Dove in the U. S. following CAA licensing of the model. For specifications and performance, see page 25.
—(FLIGHT MAGAZINE Photo by the Author.)

Dove *at first sight*

By TOM ASHLEY

THE twin-engine de Havilland Dove has come to the United States, fully licensed by CAA, and the first U. S. demonstrator is winning admirers everywhere it goes with its modern design features. Dur- its first three weeks here, it logged 75 hours in demonstrations, including a 2,400-mile cross-country on which we went along to have a look at the Dove's performance between airports as well as in the traffic patterns.

Sir Geoffrey DH himself would have been the proudest Briton ever, had he been with us to see the admiring spectators and the cabin loads of flight guests, most of them pilots of executive airplanes. These, along with small airlines, are the primary targets of de Havilland's invasion of the rich U. S. commercial market for light twins. As of the date of our junket, the first executive Dove had already been sold and was to have been delivered during January (to an East Texas oil man), and the first U. S. airline customer had been signed on the dotted line for a fleet of Doves pending favorable U. S. mail rate negotiations.

De Havilland's Canadian factory at Toronto aimed its sales sights directly at the U. S. oil industry, which pioneered the use of private aircraft for executive transportation and has remained down through the years as the principal user of multi-engine business planes. First de Havilland distributor in the U. S. is Riley Aircraft of Shreveport, Louisiana. This aircraft sales enterprise, comparatively new in aviation, is strategically located in the heart of one of the world's richest oil producing areas. It is owned by Jack Riley, who at 34 has built an electric oil well log-reproduction service doing business with the oil industry at a rate of a million dollars annually in several parts of the nation and in Canada. Riley learned to fly following World War II, using an airplane to advantage in traveling about the oil country developing his reproduction services. Two years ago he was appointed an aircraft dealer and has since sold, among others, twenty-odd Navions for Ryan Aeronautical Company (24 Navions are based at Shreveport Municipal, where his aircraft sales office is located). He has oil well service salesmen calling on the oil industry who double as aircraft salesmen. Since their customers appear to be the best immediate prospects for the Dove, de Havilland singled out Riley to handle its first U. S. distributorship and lost no time equipping him with a Dove demonstrator, a mechanic from the Canadian factory at Toronto, a starting stock of spare parts and the promise of one delivery per month until Spring, when several

deliveries per month will be available.

How can de Havilland deliver propellers, engines, Doves and parts when U. S. aircraft, parts and accessories are in limited supply due to the mobilization? People who ask that are told that de Havilland has considerable Dove production under way and needs U. S. dollars urgently enough to give U. S. deliveries prime consideration. "Considerable production" came about this way: Since the prototype Dove first flew in September, 1945, over 300 Doves have been delivered and are in service around the world, mostly in short-haul airline service. This reflects an average annual production of more than 60 Doves, which is considerable, plus spares for the growing number in service.

How about servicing the Dove? Ask that and you are told: First, the Dove's postwar design emphasizes ease of maintenance because it was engineered to airline standards from a maintenance standpoint, these standards anticipating 1,000 to 3,000 hrs. of utilization annually. Second, Riley Aircraft and de Havilland have designated Southern Aviation at Shreveport, one of the South's best shops, for Dove service and are establishing there a complete inventory of spares and accessories until other service stations elsewhere are justified by expected sales of airplanes. This service will be performed by factory-trained mechanics. Third, the Canadian de Havilland factory at Toronto will stock complete spares and accessories to fill orders direct without a distributor having to order all the way from England.

Maintenance Angles

This matter of servicing is of first importance to a prospect who has need for an airplane in the Dove's category. Lack of sufficient servicing bases handicapped the growth of executive aviation in the United States for many

(Continued on page 25)

Most efficient de Havilland transport since 1938 is the factory's description of the Dove. Note tapered wing.
—(de Havilland Photo.)

Here's the Dove demonstrator at Richmond, Virginia, as seen through the huge circular windows of the beautiful new terminal building there.
(FLIGHT MAGAZINE Photo by the Author.)

The States Take the Lead

While Washington continues to dilly-dally, the states grab the ball and organize

SPURRED on by the realization this nation is suffering a major defeat in Korea and that official Washington is unable to extricate itself from its own web of red tape to provide the necessary leadership, state aviation officials last month took the bit in their mouths and went to work. As a result, comforting reports of progress in civil air defense planning and mobilization poured into FLIGHT MAGAZINE's office from all over the nation.

Here's a run-down on some of the action taking place at the state and local levels, Washington's desultory antics notwithstanding:

CALIFORNIA. Perhaps the best organized and most alert of all states because they started work in September and October immediately after the release of the Aviation Development Advisory Committee's report, "America's Civil Air Power." With this document as a guide, California airmen under direction of the State Aeronautics Commission, prepared and adopted the now well-known "California Plan," published in our December edition. This is the plan recently rewritten by the Emergency Aviation Council in Washington and is now being applied as the generally accepted plan in practically all states. The California Aeronautics Commission is busy designating Control Airports and registering airmen and aircraft throughout the state.

TEXAS. The State Aeronautics Commission held a meeting in January with its civil defense advisory council made up of leaders in every branch of aviation and representatives from all aviation organizations. They voted to mobilize immediately using the so-called California Plan as revised by the EAC for the pattern. A directive to all airports and airmen with registration forms will be distributed together with simple instructions for the formation of local airport defense units as outlined in FLIGHT MAGAZINE, January issue. The Texas Wing of Civil Air Patrol, under new leadership, is making a whirlwind recruiting campaign, encouraging the affiliation of local civil air defense units without the necessity of rank, uniforms, regular meetings or other CAP paraphernalia.

ON January 4, the state aviation directors for the states of Iowa, Minnesota, North and South Dakota, Nebraska, Missouri, Illinois and Wisconsin met in Des Moines, Iowa, to evaluate and coordinate the civil defense planning in their states. Here's a verbatim report from Les Schroeder, commissioner of aeronautics for the State of Minnesota, and original author of the first civil aviation mobilization plan which formed the pattern for the Aviation Development Advisory Committee report:

NORTH DAKOTA. While State Director Vavra was unable to attend the meeting, it was reported that he has activated the recommended national plan in his state, working under the director of civil defense for North Dakota.

SOUTH DAKOTA. State Director Hanson reported that they have already divided their state into districts and appointed local aviation chiefs and that their plan is well under way, functioning under their state director of civil defense.

NEBRASKA. State Director Jay Ramsey reported that the plan for the state of Nebraska is virtually completed and awaits only legislative authority to be placed into effect. The Nebraska plan has been set up by Mr. Ramsey in coordination with his director of civil defense.

WYOMING. It was reported at the Des Moines meeting that the Governor of Wyoming appointed State Aeronautics Director Faught as coordinator for civil defense in that state and the recommended plan has been well established.

MISSOURI. State Aeronautics director Pace reported that the Department of Aeronautics is charged with the responsibility of coordinating civil aviation under the director of transportation for civil defense and that they are making satisfactory progress, the state having been divided into districts and the local control airports in process of selection.

ILLINOIS. State Director McLaughlin reported that an advisory council has been created and that the Governor has named him chairman of the Council. Tentative plans have been made but final action under the state director of civil defense is awaiting acceptance of the recommended plans by the air coordinating committee.

WISCONSIN. State Director Jordan has been named director of transportation under the state director of civil defense and has already organized his state into regions and established his local control airports and has even gone to the extent of having his "dry run" tests in the form of practice missions.

IOWA. State Aviation Director Norb Locke reported and displayed the complete plan for the division of his state into districts and local control airports, together with a detailed provision for activating the plan which awaits only the action of the governor authorizing the implementation. Mr. Locke indicated that he expected to have authority by the middle of January and to conduct practice missions in coordination with his director of civil defense before March 1.

MINNESOTA. In the state of Minnesota the commissioner of aeronautics has been named state chief of civil aviation in civil defense functioning under the state director of civil defense, Col. E. B. Miller. The recommended national plan has been used as the framework for the state plan. The advisory council has been selected and has held its first meeting, and notification of the designation of control airports and local aviation chiefs has been mailed out. Commissioner Schroeder expects to be ready for first practice missions, coordinated with local and state civil defense directors, sometime in February.

PENNSYLVANIA: State Aeronautics Director Bill Anderson has

(Continued on page 26)

FIRST PHOTO OF THE NEW MODEL C-35 Bonanza for 1951 shows all-over paint job now standard, with "bird" stripe from D-18S Twin. Look closely and you'll see larger stabilizers (20% greater chord) for better stability and wing-root leading-edge fillet for better stall characteristics.

(Beech Photo.)

The New C-35 Bonanza

THERE'S a new model Beechcraft Bonanza for 1951, offering significant improvements over last year's model. It is the $12,990 Model C-35, fourth in the Bonanza series since the design was perfected after the war, and it was unveiled late in January at the annual distributor's meeting in Wichita. Over 100 of the C-35's were already on order for Spring delivery when it was unveiled following delivery of the 2,680th Bonanza to be produced by Beech, which is currently turning them out at a rate of 11 Bonanzas per week.

Distributors were reassured at the meeting when told by Jack Gaty, vice president and general manager, that Beech intends to continue building airplanes for executives as long as the factory can get materials and components. "It is our opinion," said Gaty, "that such airplanes constitute an invaluable national asset, whatever the course of the cold, warm or hot war. We believe that what helps business can not fail to benefit our nation."

Headlining the new C-35 achievements is increased directional stability, obtained through increasing the stabilizer chord about 20% and slightly changing the stabilizer's incidence angle to provide better longitudinal stability. In addition, an improvement in the stall characteristics was achieved through the addition of a new wing-root fillet inboard on the leading edge. This replaces the stall strips on earlier models, giving faster recovery from stall conditions and reducing loss of altitude in the recovery.

Increased take-off power and normal power ratings for its Continental C-185-11 engine give the C-35 Bonanza 205 hp. at 2,600 rpm. for take-off and a normal rating of 185 hp. at 2,300 rpm. All-metal aluminum alloy blades have been incorporated in the Beech B-215 electrically-controllable variable-pitch propeller. Its efficiency is rated at about 85 per cent.

A 50-lb. increase brings empty and gross weights up to 1,625 lbs. and 2,700 lbs. respectively, retaining the previous model's 1,075-lb. useful load. Landing speed is 55 mph. and landing run is only 227 ft. (30-degree flaps, sea level, 10-mph. wind) at gross weight.

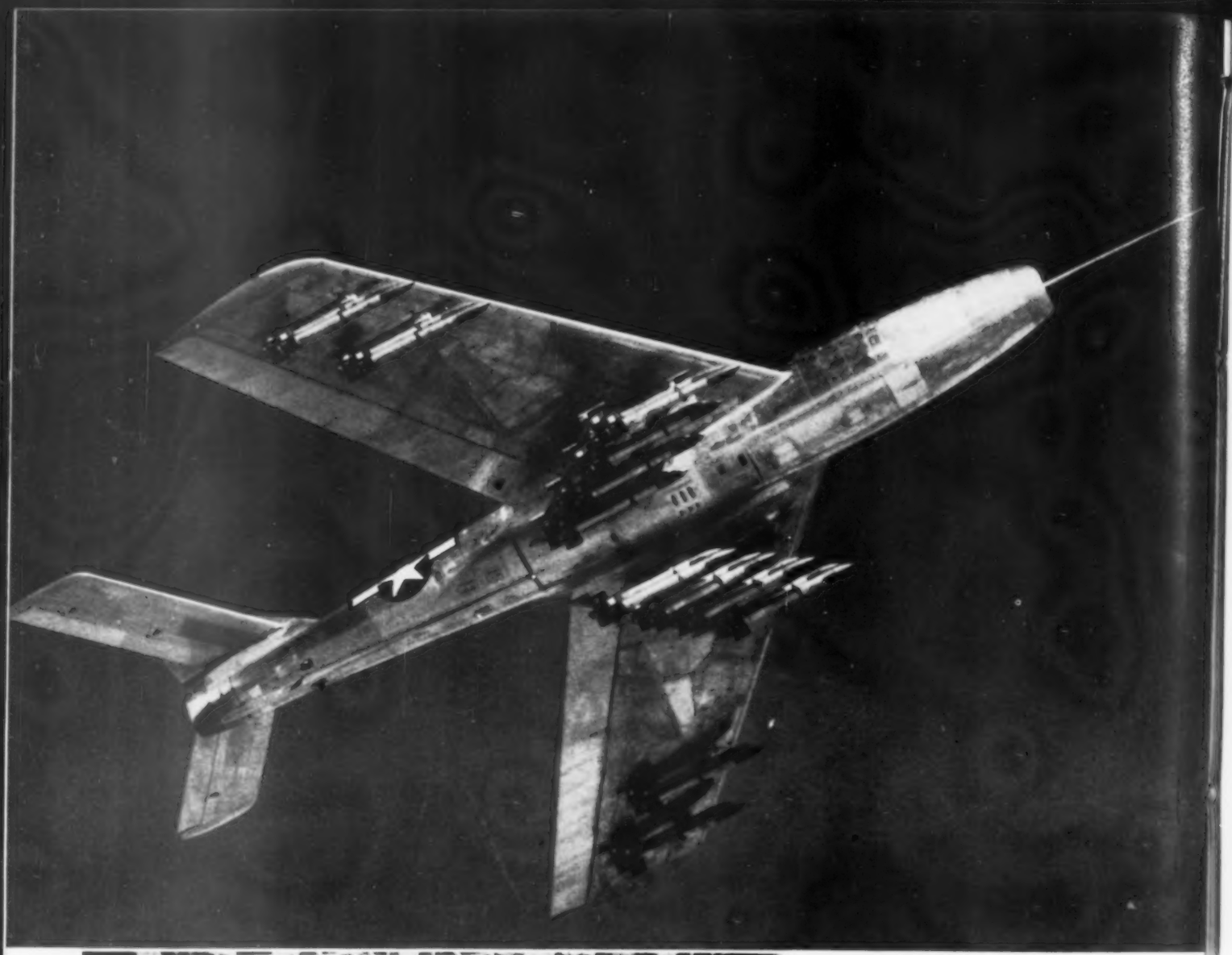
Rate-of-climb has been increased from 890 fpm. to 1,110 fpm. at sea level and gross weight, with take-off distance of only 525 ft. at sea level, with 10-mph. wind and 20-degree flaps. An increase is reflected in the new model's factory-described cruising speed of 175 mph. at 8,000 ft., using 120 hp. (65 per cent of normal rated power). Beech says this performance is available at a fuel consumption of only 9.5 gals. per hr., giving the Bonanza 19.9 miles per gal. Top speed is now 190 mph. as compared with 184 mph. for the previous model.

At 165 mph. and 10,000 ft., range figures are listed as 775 miles with standard tankage of 39 gals.; 975 miles with an auxiliary 10-gal. tank, and 1,180 miles with an auxiliary 20-gal. tank. Service ceiling is 18,000 ft. and absolute ceiling 19,800 ft.

The Lear Model LTRA-5 is standard radio equipment in the C-35, offering 6-channel VHF transmission, tunable VHF reception, and marker beacon - range - broadcast reception. Dome speaker has been moved forward, with the dome light of double capacity. A 35-ampere generator replaces the 25-ampere generator used previously. A functional LF antenna mast permits addition of a second receiver without installing another mast.

Safety features of the C-35 include the new "Hi-Strength" safety harness, developed by Beech after extensive crash research. It can be worn comfortably with shoulder straps in place or as a safety belt only and exceeds CAA requirements, marking a definite contribution by Beech to flight safety. In addition, seat structures were strengthened. A new warning-horn circuit supplements the safety switch to help prevent accidental gear retraction, sounding the horn if the switch is moved to "up" when weight is still on the wheels. The C-35 is equipped with the Safe-Flight stall-warning indicator which actuates both a horn and a flashing light. Accidental cabin door opening in flight is prevented by a new positive-control lock with safety switch.

For the first time, all-over paint jobs are included as standard, a new "bird" striping similar to that on the D-18S Twin being used. Cabin comfort features include more comfortable front seats, a two-position reclining rear seat which also has a full-width head rest, an additional air intake and an extra air-exit duct. As a finishing touch, Beech says the flying business man who wants to arrive at his best can have a Remington-Rand electric razor that plugs in the cigaret lighter (remember how the late Bill Odom used to arrive in his Bonanza freshly-shaved? He was first to use the electric razor in a Bonanza). ★ ★ ★



SWEPT-WING F-84F Thunderjet for USAF has passed "Phase Two" tests at Muroc and is going into accelerated production. Rocket load above consists of 24 five-inch missiles. Alternative loads include (1) two 1,000-lb. bombs plus 18 five-inch rockets; (2) two 230-gal. external fuel tanks plus 18 five-inch rockets, and (3) two 450-gal. external fuel tanks. Fixed armament is six .50-cal. machine guns.
—(Republic Aviation Photo.)

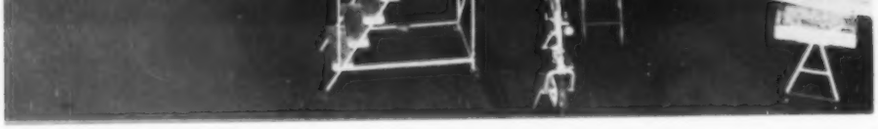
flight pictorial

FIGHTERS FOR THE FRONT now rolling from these Republic Aviation lines are straight-wing F-84E's, shown in one segment of the 1,600,000-sq. ft. factory area. The faster swept-wing "F" is replacing the "E" in production.
—(Republic Aviation Photo.)

HIGH-SPEED DESIGN of new "F" series is emphasized by degree of sweep in thin flight surfaces. Note elevation of horizontal tail surfaces above turbulence. Republic says "F" performance "far exceeds" that of predecessor model "E," which was 600-odd-mph. fighter. F-84F dimensions are 34-ft. span, 38-ft. length and 14-ft. height, with 25,000-lb. gross weight. Other details were withheld.
—(Republic Aviation Photo.)

flight pictorial

MIGHTY WALLOP of F-84F is symbolized in this excellent photo showing 5-in. rockets being fired and in flight from latest Thunderjet, designed for both ground support and interception, with ceiling above 45,000 ft. Predecessor F-84E's entered combat in Korea last month, shooting down Russian-built MIG-15's.
—(Republic Aviation Photo)



the "E" in production.
—(Republic Aviation Photo.)

Questions and Answers for Airport Operators

Keep Airports Open

QUESTION: If we're going to have a war or anything like it, how about giving us something worthwhile that we can use to argue against any forthcoming attempts to close our Municipal Airport to lightplanes like they did during the last war? I understand Kansas City, for example, never did close their airport to lightplanes and had no trouble at all mixing military, airline and civilian traffic. How can this be done?

ANSWER: That's not an easy question to answer by any means. A great deal depends upon the physical characteristics of the airport involved and the amount of traffic in any of the categories which might tend to make the problem difficult—that is, military, scheduled air transport, non-scheduled, personal flying, and training. We don't believe it could be said that any airport which, in the last war, had the volume of traffic that Kansas City had, actually mixed military, airline, and civilian traffic with no trouble. However, Kansas City had traditionally, as we recall it, maintained considerable turf area which was used for light aircraft, especially those in training. The military traffic was mainly of a transient nature, and there was fairly heavy scheduled airline movement.

Where it is possible to set up good turf operations and so design small ship traffic patterns that they are within and on the left side of the larger left-hand traffic pattern required for faster aircraft, the capacity of the field for military, airline and personal plane use is greatly increased. In setting up such traffic patterns, it is believed that this can only be done when the small ship pattern does not have to cross the large aircraft pattern. Of course, the taxi patterns will intersect in many cases, and careful control must be exercised.

There are a large number of fields in the country today with heavy multi-engine traffic and no turf traffic, whereas if the turf areas were improved, inspected and maintained, and with patterns of a non-interfering type set up, a probable increase in capacity and a reduction in delays might occur. It is recommended that if a situation like this confronts your town, you request a get-together of all elements in the local aviation picture, including CAA, the airport manager, the fixed-base operators, the airlines, and the local owners of personal aircraft to see what you can work out. Your airport manager can do a great deal toward maintaining lightplane use on your airport, if you can prevail upon him to do so.

Problems Facing Designated Airports

QUESTION: Now it's to be mobilization of civil air power, and we're all for it because unless we do mobilize now, civil aviation won't be effectively utilized in an emergency. But this brings up some problems for managers of airports, both small and large. As we see it, effective utilization in an emergency is going to hinge mainly on two types of airports and how well they do their jobs. These are "Control Airports" and "Master Control Airports." They're being designated as such by state aviation officials and CAA is involved because of the need for uniform standards and the essentiality of utilizing national communications of the CAA. Considerable information on such developments has appeared in your magazine, but can you discuss some of the principal problems facing airport managers in an emergency? We need all the dope we can get.

ANSWER: Did you read the California plan outlined in our December issue? It is very difficult for us to give clear and definite solutions to the problems which will face airport managers in the event of mobilization, since the scope and extent of regulatory action is not known today. However, we'll try to take up some of the needs which may arise.

Take the matter of guards, for instance. As we recall the situation in the last war, it was stipulated that all airports be designated by the CAA and that all aircraft on the airport be under guard twenty-four hours a day. Now, the hiring of guards for an airport on that basis is an expensive proposition. If we consider an airport serving a moderate-size town, with three hangars and aircraft tied down in several places, we have a problem of a costly guard system. Those aircraft that are stored in hangars which can be locked at night present a fairly simple problem of a night watchman. If regulations permit it, probably one night watchman could take over all three hangars if he kept on the move.

Tied-down aircraft are a much greater problem, because usually they are widely scattered. If the airport manager will designate just one area

(Continued on page 22)

AIR REPORT

(Continued from page 4)

BASES is picking up, with officer teams inspecting many for future activities.

FIRST CIVILIAN CONTRACT SCHOOL for USAF pilot training goes to Graham Aviation, Pennsylvania operator which conducted World War II training. Graham has contract for Greenville, Mississippi, base. . . . **NO DECISION YET** from USAF evaluation of new-type trainers.

REGARDLESS OF ALTITUDE, file a flight plan before entering ADIZ areas (Air Defense Identification Zones), now clearly marked on bulletins supplied to all airports. Careless pilots not only risk interception by fighters but anti-aircraft fire in some areas (it has happened already) and invite prosecution and imposition of more severe controls.

TOTAL CIVIL AIRCRAFT HOURS FLOWN IN 1949 are estimated to have been 13.5 million, of which only 2.5 million were logged by air carriers. Large executive multi-engine aircraft accounted for 750,000 hrs., leaving some 10,000,000 hrs. logged by business, executive, industrial, agricultural and operator pilots — a ratio of 4 to 1 against airline total. Of 10 million non-scheduled hours, 2.6 were catalogued as personal, 2.7

(Continued on page 22)

WHAT IT TAKES TO KEEP 'EM FLYING is illustrated by this small part of a large fixed-base operator's stockroom, this unusually neat and well-lighted one being at Southwest Airmotive. Serving a 6-state territory, Southwest maintains 500,000 stock items representing 30,000 separate parts types needed by customers. It is distributor for 50 leading aviation manufacturers. Paul Kennedy, sales manager, recently enlarged his inventory facilities.

MIG-15's.
—(Republic Aviation Photo)

It Has Everything

4-PLACE—ALL-METAL—SPEED

ROOM—LUXURIOUS CABIN—HIGH WING STABILITY

...at a Price Several Thousand Dollars Lower THAN ANY OTHER 4-PLACE ALL-METAL PLANE ON THE MARKET

Ride the Cessna 170* in comfort . . . four roomy, (adjustable) foam rubber seats . . . large luggage compartment for long trips.

You cruise serenely at over 120 m.p.h., squeeze over 15 miles out of a gallon of gas, fly 500 miles nonstop. Maintenance is easy and inexpensive.

Talk normally during flight . . . unique engine mount, improved insulation and door seal reduce both noise and vibration unbelievably.

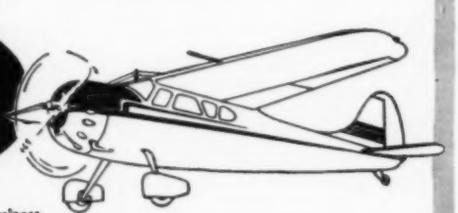
Get stable "big ship" feel, "small ship" responsiveness—with perfected tapered semicantilever high-wing design. Land on short fields—with selective-action 50° flaps, adjacent trim control, picture-window visibility. Set down softly on rough terrain—with easy-action nonfade brakes and patented shock-absorbing landing gear.

The Cessna 170 is a luxurious cabin cruiser yet can be an aerial "jack-of-all-trades." Remove rear seat in three minutes for cargo-type luggage space, or equip it with: skis for use on snow . . . seaplane floats for use on water . . . cross-wind wheels for single-strip all-wind conditions . . . a stretcher for ambulance service . . . spraying equipment for crop-protection work.

Cessna 170

On Display at Your Cessna Dealer's...

Cessna 190 SERIES



The perfect answer for big or small business firms, because this wonderful ship carries five people at over 160 m.p.h., yet is simple, practical, comfortable to operate. Airline-type engines and Hamilton Standard Constant Speed Propellers.

** During 1950, the Cessna 170 outsold all other four-place airplanes, regardless of price.*

MAIL THIS COUPON NOW:

Cessna Aircraft Co.
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Please send free literature giving complete description of the Cessna 170.

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QUESTIONS AND ANSWERS

(Continued from page 20)

for tied-down aircraft and place that area close to the tour of movement of the aforementioned night watchman, that may satisfy whatever regulations are issued. It would then be necessary for the manager to refuse any tie-down that wasn't within that area. If the area was large, it might be necessary to have a night guard on duty just for the tie-down area. In the daytime if one of the hangar attendants normally on duty while the hangar is open is given the responsibilities of guard duty along with his other duties, he probably can satisfy the regulations.

Any regulation which imposes obligations for guarding aircraft brings into greater need the necessity for good airport registers. There is many a large airport in the country today serving personal aviation which has one or two apparently flyable aircraft tied-down, and the owners' whereabouts unknown. Constant vigilance and the requirement of a good register is probably the only way to avoid this.

If registers are required, for recording the departure and arrival of local and transient aircraft, the problems that arise are cost, inconvenience to the pilot, and delay. This is especially true on airports with a large number of hangars or widely scattered operations. If regulations permit, it seems desirable to delegate to responsible fixed-base operators the function of clearing and registering movements of aircraft. However, someone on the airport manager's staff must assume the responsibility of being chief clearance officer to see that such delegation of authority is handled properly in order that the regulatory authority may be satisfied with whatever system is put in. The practice of requiring the transient or the local pilot on a large, scattered operation to go to the airport manager's office for clearance as the only point at which it can be obtained, seriously inconveniences civil aviation and creates a further delay for the local or transient pilot.

We saw a lot of this in World War II, and feel that it discouraged civil aviation to a great extent. For an airport to employ additional help to handle the clearance function at a convenient location on the ramp may create an item of cost that is difficult to justify in the eyes of the City Council, although we remember one airport in a large city in the last war which employed uniformed clearance officers, stationed in a small building on the ramp, to handle the departure and arrival notices of aircraft, and they did so without requiring the pilot to leave the aircraft. He simply had to taxi by the clearance office. At the other end of the field a fixed-base operator also had a clearance office for all the aircraft using his hangar.

On the airports serving smaller communities, those having a limited number of aircraft and perhaps no more than one operator, the guard problem usually had to be worked out with an operator's employe serving as night watchman and actually living on the field. Tighter security may be required and arrangements must satisfy whatever regulations are prescribed.

(To Be Continued Next Month)

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AIR REPORT

(Continued from page 20)

as business and professional, and 4.5 as revenue producing such as in training, charter, industrial, patrol, etc.

PERSONAL PLANE OUTPUT during 1950 forged ahead of 1949, which was lowest of postwar years, with shipments of 3,425 planes as against 3,362. Significant were increases during last three months of 1950, an unprecedented trend. Year's dollar volume of sales was $18.5 million as against $14.3 million for 1949. Cessna led with 1,134 units with Piper having 1,108. Beech Bonanza deliveries totalled 487 as compared with only 298 during 1949.

HATS OFF TO CESSNA'S 10 TOP DISTRIBUTORS IN 1950 SALES, these being ranked as follows by Sales Manager Don Flower: Cassio Muniz, Sao Paulo, Brazil; R. P. Bowman & Co., Oakland, Calif.; Mauk's Airpark, Blackwell, Okla.; Clinton Aviation, Denver, Colo.; Cruse Aviation, Inc., Houston, Tex.; Mid-States Aviation, Northbrook, Ill.; Aero Activities, Inc., Detroit, Mich.; Walston Aviation, East Alton, Ill.; Yingling Aircraft, Wichita, Kansas, and Aerial Surveys of Pittsburgh (Pa.).

A $5,000 COMMERCIAL HELICOPTER for 1951 marketing was well along in CAA certification procedure when military orders forced Hiller to postpone production plans. . . . **LOOK FOR COMMERCIAL MODELS** of McDonnell's sensational "Little Henry" helicopter powered by ram-jet units on wing tips. . . . **BELL AIRCRAFT IS DEPARTING THE AIRFRAME BUSINESS** to concentrate on helicopters and guided missiles. . . . **BOEING LIGHTWEIGHT 175-HP. GAS TURBINE** is going into production for the USN's Bureau of Ships, to be used for electric power on minesweepers. It has promising lightplane turbo-prop possibilities.

KAISER-FRAZER HAS DONE IT AGAIN, this time getting a big contract for P2V components from Lockheed. Six other firms are in the P2V network — Chance Vought, Temco, Beech, Cessna, Rohr and Solar. . . . **JIM CARMICHAEL** will head Lockheed's operation at Marietta, Ga. . . . **MORE F4U CORSAIR PRODUCTION** has been ordered from Chance Vought, as well as F7U production.

12,000 COINS AND CURRENCY BILLS were lugged to San Diego by Navion Distributor Chet Hall of Grand Rapids to pay for his latest Super 260 and took all night for Earl Prudden to count it. . . . **VOLUME OUTPUT OF LEAR F-5 AUTOPILOTS** is planned by Minneapolis-Honeywell, licensed by Lear. . . . **NEW NON-REFUELING ENDURANCE RECORD** for B-36 is 51 hrs. 20 mins. accomplished by B. A. Erickson and a company flight-test crew recently in an RB-36D. . . . **KEN ELLINGTON** is now assistant to Republic Aviation's president as well as public relations manager, and **JOSEPH ANDREINI,** former production manager, is now Republic's factory manager. . . . **COLONEL LUKE HARRIS** has been named general production manager of Pacific Airmotive. . . . **WILLIAM VAN DUSEN,** who organized and for 20 years directed Pan American Airways' public relations, has joined Eddie Rickenbacker as vice president of Eastern Air Lines, serving as special assistant to the president.

BELL AIRCRAFT'S FT. WORTH FACTORY in the old Globe Aircraft plant will produce jet pods for B-36 and B-47 bombers, with working force of about 400 persons. . . . **TEXAS BULLET** orders are being taken by Aircraft Manufacturing Co., Stewart Field, Tyler, Texas, which is working on 10 airplanes as starter, pricing them at $8,950 each. Pop Johnson, designer, hasn't been with firm for some time. Bullet is all-metal, 4-place, low-wing with tail wheel and retractable main gear, powered with 185-hp. Continental. Empty weight is 1,350 lbs., gross 2,300 lbs.

Honors for Annie Brazzell

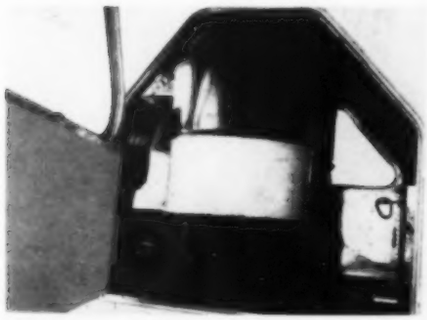
A gang of oldtimers who used to gather every Leap Year on February 29 to honor "Uncle Jim" Brazzell of Oklahoma on his birthday (which came only once every four years) will meet early in February to honor Uncle Jim's widow, Annie Brazzell. Uncle Jim, who died in 1948 at the age of eighty, was one of the world's oldest licensed pilots. Charlie Short, Tulsa Airport Manager, is heading up arrangements for the reunion of oldtimers who include Billy Parker, Red Mosier, Jim Doolittle, Joe Shumate, Buck Rowe, Lawler Reeves, Benny Turner, Dick Boutelle, Jimmie Kolp, John Burke, Benny Griffin, A. M. Alcorn, Moss Patterson, Bill Green, Red Gray, Don Marshall and Earl Ricks.

The DeHavilland Beaver

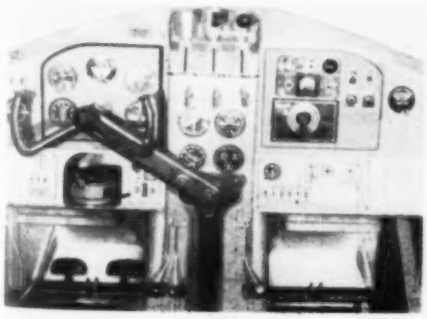
FOR YOUR TOUGHEST JOBS

Designed with versatility and pay load in mind

Passenger version has luxurious and comfortable appointments, with ample dimensions, of 150 cubic feet, for 4, 5, 6 or 7 passengers and pilot.



Freight loading is facilitated by cabin doors built flush with floor and hatch in rear wall for long pieces of freight.



Flight instruments are grouped on a standard and blind flying panel. Throttle, pitch and mixture controls centrally located. Wheel is throw-over type with dual rudder pedals.

Sturdy construction and rugged dependability

The Beaver is designed to survive continuous hard use under the most strenuous operating conditions. It is built to withstand severe exposure in the open with a minimum of service and maintenance.

From the bitter cold forests of the Canadian bush to the steaming hot jungles of South America the DeHavilland BEAVER meets the aircraft operator's every requirement 100 per cent.

The Babb Company is also proud to announce the availability of the new Beaver Sprayer. Canadian operators have replaced four to five smaller airplanes and crews, using one Beaver with its 240 gallon spray tank. This economy means many dollars in profit to the operator.

BEAVER performance spells "UTILITY"

	Landplane	Seaplane
Gross Weight	4,820 lbs.	4,820 lbs.
Max. Sp. 5,000 ft.	179 mph.	160 mph.
Cr. Sp. 5,000 ft.	153 mph.	137.5 mph.
Max. Cl. Sea Level	1,290 fpm.	1,200 fpm.
Range (Gross Load)	578 miles	510 miles
and Payload (Max. Range)	1,140 lbs.	1,000 lbs.
Take Off (over 50' obstacle)	895 ft.	1,195 ft.

A Southern Transcontinental Demonstration Flight will be made early in February demonstrating a semi-deluxe seven-place version of the BEAVER executive transport. Write or wire for demonstration schedule and appointments.

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Baton Rouge, Louisiana

Minnesota
VAN'S AIR SERVICE, INC.
Whitney Memorial Airport
St. Cloud, Minnesota

New Jersey
MALLARD AIR SERVICE, INC.
Teterboro Air Terminal
Teterboro, New Jersey

New York
BUFFALO AERO. CORP.
Hangar 1, Buffalo Airport
Buffalo, New York

Texas
GENERAL AERONAUTICS, INC.
Meacham Field
Fort Worth, Texas

Washington and Alaska
WASHINGTON AIRCRAFT & TRANSPORT CORP.
Boeing Field
Seattle, Washington

Mexico
MORGAN & WALTZ, SUCS., S.A.
Monterrey 101-410
Mexico City, Mexico

Puerto Rico
DORADO AIRFIELD
Dorado, Puerto Rico
(Branch Off.: International Terminal, San Juan)

Nothing like a missing part . . . . to gum up the works!

Like the battle lost for a horseshoe nail, any piece of equipment is only as good as its weakest part.

Navion owners can rest while others worry—

The Ryan-Navion distributors take pride in the fact that, regardless of the present critical supply problem, they will be able to offer the Navion owner replacement parts, the same high standards of workmanship and maintain the same economical service for which they are famous.

Ryan Navion
AUTHORIZED PARTS & SERVICE

STATES TAKE THE LEAD

DOVE AT FIRST SIGHT

(Continued from page 15)

years. Owners bought spare engines, propellers, accessories and parts when taking delivery of airplanes. Their own mechanics maintained this inventory in addition to performing the maintenance. This burden has been reduced considerably since World War II, a network of excellent servicing bases having been developed by far-sighted fixed-base operators who anticipated the expansion of executive flying. As the number of Dove purchases in the U. S. justifies, de Havilland presumably would have little difficulty in arranging for these same fixed-base operators to offer complete parts and servicing for Doves.

While the Dove uses special nuts and bolts and tools, the airplane has numerous servicing features which are outstanding and which are, in some cases, far ahead of U. S. aircraft maintenance features of prewar design.

With few exceptions, for example, the entire airplane can be inspected and worked on without the use of steps or platforms. Engines, propellers, and practically all of the airframe are at or below shoulder height. Inspection stations are everywhere and are accessible not through removable plates but through hinged access doors of generous size and equipped with simple toggle fasteners. Detachable cowlings have been almost completely avoided to save maintenance man hours. Many components are interchangeable, including power plant "eggs" and landing gear legs. Two men can change a power unit in only 70 minutes, a feat made possible by such refinements as the use of quick-coupling fittings for engine controls and electrical services, which are conveniently color-coded and housed in hinged access panels in

(Continued on page 31)

De HAVILLAND DOVE

All-metal, low-wing, 8 to 13-place, powered with two de Havilland Gipsy Queen 70-4 six-cylinder, inverted, in-line, air-cooled, continuous-injection, geared and supercharged engines rated at 345 hp. each for take-off and 290 hp. each for maximum continuous operation, and de Havilland 3-blade Hydromatic constant-speed, feathering and reversing propellers. All fuel quantities are in U. S. gallons and all performance figures, unless otherwise indicated, are at gross weight of 8,500 lbs., sea level, standard air and with aircraft equipped with standard radio aerial system but without de-icing or any other additional exterior fittings.

Dimensions and Loadings

Span, ft.	57
Length, ft./ins.	39/6
Height over rudder, ft./ins.	13/4
Height to top of engine nacelle, ft./ins.	5/9
Height to cabin door and floor level, ft./ins.	2/3
Tread, ft./ins.	13/9
Wing area, sq. ft.	335
Wing loading, lbs./sq. ft.	25.3
Power loading, lbs./bhp.	12.3
Max. gross weight, lbs.	8,500
Av. empty weight, airline-type equipment, less radio, lbs.	5,820

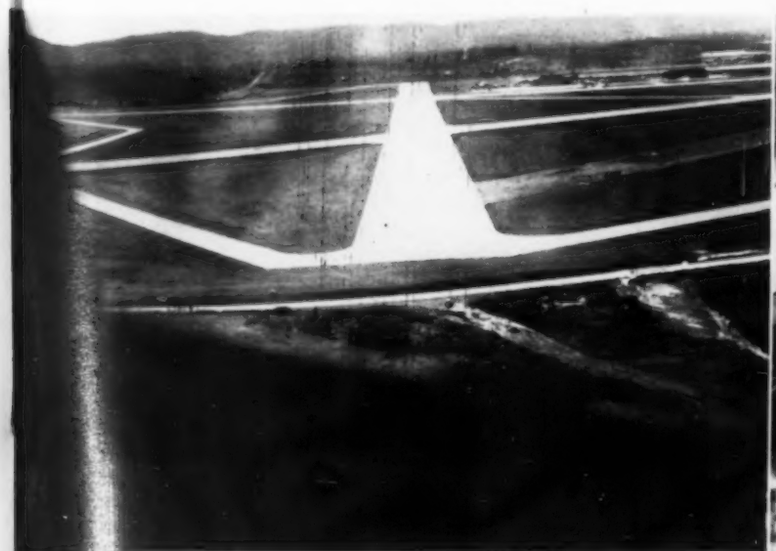
Fuel and Consumption

Standard fuel capacity, gals. (Rear baggage compartment auxiliary tank of 65-gals. available as extra)	204
Oil capacity, gals.	19.2
Fuel consumption:	
68% power, gph.	34
60% power, gph.	30
Single-engine, 234 hp., gph.	18

Performance

Never exceed speed, mph. (IAS)	237
Max. level flight speed at max. continuous power (290 hp.) at 5,000 ft. mph. (TAS)	223
Cruising speed, 60% power, 8,000 ft. alt., mph. (TAS)	179
Single-engine cruising speed, 8,000 ft., 68% power, mph. (TAS)	130
Maneuvering speed, mph. (IAS)	150
Safety factor: This airplane stressed for 5.1 g's with a 1.7 safety factor	
Stall speed, power off, full flaps, gear down, mph. (TAS)	72
Stall speed, power on, full flaps, gear down, mph. (TAS)	68
Rate of climb, 8,500 lbs., take-off power, fpm.	1,200
Rate of climb, single engine, 8,500 lbs., take-off power, fpm.	230
Service ceiling, ft.	20,000
Service ceiling, single-engine, ft.	8,500
Take-off distance to 50 ft., ft. (Using airline technique, i.e., climbing away at safety speed of 90 mph. with flaps at 20 degrees. Note: The aircraft can, alternatively, be landed and brought to rest in less than this distance.)	2,370
Single-engine take-off to 50 ft., ft. (When one engine fails at safety speed, i.e., when starting to climb and with flaps still at 20 degrees. Note: The aircraft can, alternatively, be landed and brought to rest in less than this distance.)	4,920
Landing distance from 50 ft., ft. (In still air at sea level onto hard runway using wheel brakes only with flaps at 60 degrees.)	2,250

View of runway just before landing at Birmingham, Ala., shows excellent visibility from cockpit. Canopy actually allows rear visibility. Dove uses 60-degree flaps for landing.



For extra cabin comfort, a couple of aluminum braces are fixed between facing seats, thick pad resembling seat cushion is placed atop them for snug fit, and in a jiffy you have a sofa-bed.
—(FLIGHT MAGAZINE Photo by the Author.)

ONLY CONTINENTAL BACKS YOU WITH ESTABLISHED WORLD-WIDE SERVICE

CONTINENTAL MODEL E185
471 Cu. In. Displacement
185 h.p. at 2300 r.p.m.

The fact that Continental aircraft engines hold all major performance records doubtless has much to do with the preference they enjoy. But at least equally important from the standpoint of owner and pilot is Continental Motors' unreserved acceptance of the obligations which that preference has imposed. This attitude is reflected in Continental Motors' maintenance of parts and service facilities wherever people fly. You may not have occasion to use them this trip, or next—but it's reassuring to know they're always there ahead of you, waiting to speed you on the way.

CONTINENTAL MOTORS — Powerful as the Nation — AMERICA'S STANDARD

CONTINENTAL POWERS MORE LIGHT PLANES THAN ALL OTHER ENGINES COMBINED

Continental Motors Corporation
Aircraft Engine Division
MUSKEGON, MICHIGAN

STATES TAKE THE LEAD

(Continued from page 16)

been appointed chief of aviation and will head up Pennsylvania's civil air defense program patterned after the nationally recommended plan. D. L. Miller is deputy and William S. Hall is assistant deputy. Headquarters have been established at the Harrisburg State Airport. County chiefs of aviation are now forming county aviation advisory councils. Approved forms for registration of airmen and aircraft have been sent out to county chiefs for action.

MASSACHUSETTS: In accordance with the national plan and the approval of the state civil defense director, Massachusetts is moving forward rapidly under the direction of Crocker Snow, state aeronautics commission director and official civil defense staff member for aviation. Advisory council includes John Griffin, Joe Garside, Charles Reed, Bob Ross, Harry Kirkpatrick, Derwin Hyde and John Groves.

NEW JERSEY: One of the first states to implement the original ADAC plan, this state is far advanced in defense planning. Capt. Frank V. Lowden, chairman of the aviation subcommittee of the aviation advisory council, was appointed head of the newly created Civil Air Defense Council. The state Bureau of Aeronautics is compiling statistical information concerning planes and pilots. Mechanics, ground technicians and pilots are being urged to improve their airmanship and stand in readiness for call in case they are needed.

Freedom of Action

Reporting further on the Des Moines meeting, Schroeder said that all state planning is being coordinated with Civil Air Patrol. It was reported in the meeting that the state of Michigan and the state of Ohio had adopted the recommended national plan.

"It was evident," Schroeder wrote, "that while some states had made more progress than others, they were all far enough along with their plans so that the next thirty days will undoubtedly produce functioning organizations in each of them reaching down to the local airport level, and from there out to every pilot and aircraft owner. It was apparent in examining the plans of all the states that each of them had as an inherent factor the greatest possible economy and freedom of action, or self-sufficiency, at the local airport level, and all of them provided for the greatest possible coordination between the civil aviation activities and the requirements of the local or area civil

(Continued on page 31)

WAR — RUSSIAN STYLE

(Continued from page 13)

agents have already accomplished along these lines.

Could a war have netted Russia as much in so short a space of time?

Visibly Strong, We Cringe in Fear

RUSSIA knows that if she can not knock the United States out quickly, she is doomed to eventual defeat. Confronted by the industrial might of this country, twice proven within a generation, Russia senses the folly of attempting to match her shortages in food, rubber, oil, transport and skilled workers against our obvious plenty. For of such is war compounded.

Her homemade propaganda sours in the knowledge that *a hundred of her cities are marked for destruction if she oversteps the bounds of our credulity and restraint.* Burned by the lash of a few recent contacts with our air and naval power, she draws her curtain tighter and roars—in frustration. *That we misinterpret the roar is not to our credit.*

Now, what of our side of the story? Over the past century we have established a moral force in the world so far beyond any Russian concept as to be incomprehensible to her—

—We have created an industrial capacity that is at once the envy and despair of Russia.

—We have produced an army that had little difficulty in destroying the evil forces of Naziism and Fascism—*then disbanded it.*

—We have built a navy capable of controlling the seven seas—then moth-balled it.

—We have brought into being the incontestable thesis that air power is peace power —*but have not supported it.*

—We have extended the hand of friendship to fallen enemies and bankrupt creditors without expectation of advantage.

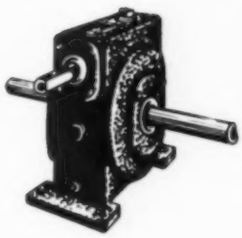
A prodigal, lusty giant in the family of nations, *it's time we snapped out of it. . . . Time that we assumed sober leadership of mankind and stopped cringing at the taunt of imperialism.*

Let us boldly proclaim that we *are* an imperialistic power intent upon establishing peace and justice throughout the world, Russian-style "democracy" notwithstanding. *Let us make it clear there is a limit to fruitless debate, a limit to the money and material we will give away, a limit to the manpower we will drain from industry.*

And let us inform the United Nations that we will lead in this crusade of 1951 but make it clear there can be no neutrals in this conflict with evil. Each must be for us or against us. Each must con-

(Continued on page 34)

ATTENTION ALL DUSTERS



1745—T EBERHARDT GEAR BOX 45-1 RATIO . . . $40.00 LIST Light weight . . . only 5 lbs., Sturdy construction, Aluminum case, ½" steel shaft, dust proof seales, Bronze Gears. This Gear Box can be mounted in any position and will give thousands of hours of trouble free operation.

18"—4 BLADE WOODEN AGITATOR PROP. ½" BORE . . . $11.50 LIST

Prices subject to regular dealer discount

CACTUS PROOF TUBES . . . Built on the same principle as Goodyear's famous Puncture Seal Tubes for Automobiles and Trucks. . . . They give you real protection against all varieties of cactus thorns. All popular sizes available for immediate delivery.

SPECIAL McCAULEY MET-L-PROPS FOR DUSTERS AND SPRAYERS.

MODEL CM-7441
(For 65 HP Aeronica Champion and Piper J-3)—**$135.00 LIST**

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(For 85 HP Aeronica Champion and Piper J-3)—**$135.00 LIST**

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great names, great products and great services . . . .

The CERTIFIED BEECHCRAFT SERVICE sign means many greats rolled into one. The distinguished firms displaying this sign have established their reputation over many years through outstanding products and service.

These great names warrant your confidence in products and services offered.

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Tradewind Airport
Amarillo, Texas

Anderson Air Activities
General Mitchell Field
Milwaukee, Wisc.

Truax Field
Madison, Wisc.

Atlantic Aviation Service
New Castle County Airport
Wilmington, Delaware

Atlantic Aviation Corp.
Teterboro Airport
(25 minutes from Times Square)
Teterboro, New Jersey

Butler Co., Aviation Division
Municipal Airport
Chicago, Ill.

Francis Aviation
Capitol City Airport
Lansing, Michigan

Gray Aircraft Svc. Co., Inc.
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Harte Flying Service
Municipal Airport
Wichita, Kansas

Hunter Flying Service, Inc.
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Cedar Rapids, Iowa

Ohio Aviation Company
Dayton Municipal Airport
Vandalia, Ohio

J. D. Reed Co., Inc.
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Roscoe Turner Aeronautical Corp.
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Tulsa, Oklahoma

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Ambler, Pennsylvania

Philadelphia International Airport
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Service

Every single **performance feature** *improved*

...that's the Beechcraft Bonanza for '51

- **Cruising speed boosted to 175 mph**
- **Top speed is now 190 mph**
- **Range increased to 775 miles**
- **Rate of climb now 1,100 fpm**
- **Service ceiling raised to 18,000 feet**
- **Fuel economy now 19.9 miles per gallon**
- **Take-off rating now 205 hp. at 2,600 rpm**

And so on—through innumerable refinements! The results give you higher, more efficient performance levels in all important categories. The new all-over paint design is now standard. And inside the roomy four-place cabin you'll find new color styling. Front seats with more "ease" built in. Two-position rear seat with head rests. Increased ventilation. Choice of smart upholstery.

There's a new Beechcraft metal propeller, and Lear VHF radio receiver, transmitter, and low frequency receiver, too. Safety and ruggedness? That's an *old* story to this sturdy plane! See your Beechcraft distributor for *all* the facts on this great, new Model C35. Or write on your company letterhead to Beech Aircraft Corporation, Wichita, Kansas, U.S.A. Scores of improvements, plus the Bonanza's famous qualities tested by more than 2,600 now in service, make it *the* buy for '51!

Beechcraft

BONANZA

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

The Winning Combination

At these fine airports all over Texas you'll find the winning combination of Humble-Esso Aviation Products and outstanding service. The combination is natural, for airport managers who are proud of their service choose products that they are proud to recommend to their customers. And among aviation products no name is more respected than Humble-Esso. Wherever you fly, look for the Humble-Esso wings — your promise of good service and the aviation products that are *first with flyers in Texas.*

HUMBLE

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AVIATION PRODUCTS

HUMBLE OIL & REFINING COMPANY

DEALER	TOWN
City of Abilene	Abilene
Lone Star Flying Service	Albany
Lynn & Haner	Alice
Chambers County Airport	Anahuac
Hail Flying Service	Austin
Jefferson County	Beaumont-Port Arthur
Travland Airport	Beeville
Reed's Air Service No. 2	Belton
Breckenridge Flying Service	Breckenridge
Frontier Airmotive, Inc.	Brownsville
City of Brownwood	Brownwood
Cardwell Flight Academy	Bryan
City of Coleman	Coleman
A. & M. College of Texas	College Station
Conroe Aircraft Sales & Service	Conroe
City of Corpus Christi	Corpus Christi
Glasson Flying Service	Corpus Christi
Carey Mize	Crockett
F. H Jackson	Cypress
Southwest Airmotive Company	Dallas
Glen Lakes Aviation Company	Dallas
North Texas Aviation Company	Denton
Hall Flying Service	Eagle Pass
Farm Air Service	El Campo
Falcon Aviation School	Falfurrias
Pecos County Airways	Fort Stockton
City of Fort Worth	Fort Worth
A. C. Flying Service	Galveston
Garwood Aviation	Garwood
Emmett Flying Service	Genoa
John A. Jackson	Goldthwaite
Graham Aviation Service	Graham
Greenville Majors Aviation	Greenville
Brown & Root, Inc.	Houston
Cliff Hyde Flying Service	Houston
Sky Travel, Inc.	Houston
Kerrville Flying Service	Junction
Kerrville Flying Service	Kerrville
Mayer Flying Service	Killeen
Frank Hogg Airport	Lamesa
Liberty Air Activity	Liberty
Lufkin Flying Service	Lufkin
Rogers Air Service	Marlin
Smith Aviation Company	Mercedes
Mexia Flying Service, Inc.	Mexia
Wisener School of Aeronautics	Mineola
Hopson-Putz Air Service	Mission
City of Monahans	Monahans
Faust Field	New Braunfels
Mayhew Aerial Service	Olney
Brownair, Inc.	Orange
Brockman Aero Service	Pearland
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Bob Tanner Aviation Services & Supplies	Port Lavaca
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Fancher Air Service	Refugio
Lane Airpark	Rosenberg
Saginaw Airport	Saginaw (Ft. Worth)
Davis Airport	San Antonio
Monroe & Witt Flying Service	San Antonio
Schneider Flying Service	Seguin
Smithville Flying Service	Smithville
Jones & Ogden	Stowell (Winnie)
W. J. Worsham	Taft
The Taylor School of Aeronautics	Taylor
Reed's Air Service	Temple
Gulf Coast Airport	Texas City
Baugh Airport	Velasco (Freeport)
Zim-Tim Sky Ranch	Victoria
Wharton Flying Service	Wharton
Stoddard Aero Service	Wink

STATES TAKE THE LEAD

(Continued from page 26)

defense director. All of the plans made provisions for the application of security controls to the extent that they may be required by the existing situation, and all of them appear to be aimed primarily at the fundamental and important function of the airplane as an instrumentality of transportation and communication.

"To sum it all up, based on our discussions in Des Moines, it appears that the states represented there have proceeded some distance in the perfecting of their plans for civil aviation in civil defense, and that within the next thirty to sixty days you will see some very substantial results. It must be remembered that in almost every instance the states are proceeding on the basis of emergency powers in the hands of the Governors and that they must depend upon sustaining legislation to be passed by the legislatures."

While most of the work up until now has been involved with basic plans and organization, civil air defense mobilization is rapidly nearing the place where determination of size, form and type of local defense units must be established. An interesting development along this line is the suggestion by CAA Fifth regional headquarters that mobile groups called Emergency Civil Defense Units be formed now.

Briefly, these units would contain two or three mobile vehicles including a truck and one or two automobiles, with two drivers for each vehicle available, all versed in first aid. One would be an A & E mechanic with a knowledge of radio repair, and one an auto mechanic. The unit would contain from five to ten airplanes with at least two qualified pilots available for each plane, one to serve as an observer during search and rescue missions. Each unit would be self-sufficient in an emergency with rations, water supply, etc., carried in the ground equipment.

Two guinea pig groups are now being formed within the 5th Region CAA office utilizing CAA aircraft and CAA personnel.

What is happening in *your* state? If yours is not among those in the process of active civil aviation mobilization, it's *your* responsibility to get the ball rolling! Now! ★ ★ ★

FOR SALE

TWIN P&W BEECHCRAFT NC 57198. Full conversion from A-11 with long nose and engine nacelles. ADF, VHF, dual instruments. Standard broadcast receiver in plush cabin. 3 reclining chairs with lounge for three. Excellent corporation or airline charter aircraft. Must sell immediately, $22,000. First deposit takes it. John J. Maggi, Security Parachute Co., Oakland, Calif.

DOVE AT FIRST SIGHT

(Continued from page 25)

the wing leading edge and rear face of the firewall. Charts detailing all wiring and piping in easy color code are permanently mounted on the inside of access doors.

Efficiency Measured

Of all the famous airplanes it has developed, de Havilland is especially proud of the Dove and sums up its performance with this tribute: "The Dove transports almost six ton-miles of payload per gallon of fuel. This represents more transportation for a given expenditure of power than any previous comparable aircraft—indeed, no de Havilland transport, large or small, has surpassed it, except only the Albatross 22-passenger liner of 1938, aerodynamically the world's most efficient transport to this day."

The 6-ton-miles-of-payload-per-gallon-fuel reference is translated into performance figures as follows: Payload, 1,810 lbs.; still-air range, 500 miles; average true air speed, 165 mph. at 8,000 ft., using 50 per cent of take-off power for a fuel consumption of 27 gals. per hr. This equals 6.11 miles to the gallon. Multiply that by the 1,810-lb. payload and you get 11,059 lb.-miles of payload, or almost 6 ton-miles, per gal. of fuel.

From Birmingham to Richmond, a distance of 620 miles, we maintained a cruising speed at 8,000 ft. of 168 mph. IAS (195 true). This kind of performance cost us an average of 39 gals. per hr. for the trip, including take-off and fast climb. But on the return, we averaged only 31 gals. per hr. total, including take-off and slower climb (145 mph. IAS, 500 fpm.) and cruised at 8,000 ft. at 158 mph. IAS (184 true). Going out, we had used a cruise power setting of 31 inches of manifold pressure and 2,200 rpm. at 8,000 ft., but coming back we cut this down to 30 inches and 2,000 rpm. at the same altitude.

Power Plants

With a gross weight of 8,500 lbs., the Dove is powered by two de Havilland Gipsy Queen 70-4 6-cylinder, inverted, in-line, air-cooled, continuous-injection, geared and supercharged engines. They are rated at 345 hp. maximum take-off power for 5 minutes (42 inches of manifold pressure and 2,800 rpm.) with maximum continuous operation at 40 inches and 2,600 rpm. (290 hp.), and economy cruise (60 per cent of maximum rated take-off power) at 30 inches and 2,000 rpm.

Well over 1,000 Queen 70's are in

WHEREVER YOU GO
WHATEVER YOU FLY

THERE IS
ARC EQUIPMENT
TO MEET YOUR
OPERATIONAL NEEDS

VHF COMMUNICATION
and
LF NAVIGATION SYSTEMS

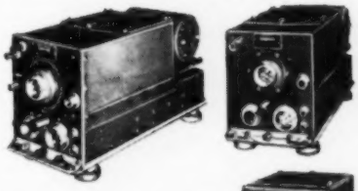
THE ARC TYPE 11A

Meets your basic navigation and communication needs. Provides for VHF transmission, LF range reception and rotatable loop navigation.

THE ARC TYPE 17

Adds two-way VHF communication. System includes tunable VHF receiver and a five-channel, crystal controlled VHF transmitter. As many as four of these transmitters may be installed providing up to 20 channels.

THE ARC TYPE 12



Gives you the combined advantages of the type 11A and the Type 17 systems. You get two-way VHF communication and LF range reception, as well as rotatable loop navigation.

Ask about ARC Type 15B Omnirange equipment and ARC's 10-channel Type F11 Isolation Amplifier. Write for all the details.

All units of these systems are type certificated by the CAA. Installations for both single and multi-engine planes are made only by authorized agencies.

ARC

AIRCRAFT RADIO CORPORATION
Boonton New Jersey
Dependable Electronic Equipment Since 1928

world-wide service. A direct descendant of the Gipsy Six of the 1930's, the first Queen 70 flew in 1945 on the Dove prototype's first flight. The 345-hp. version is approved by CAA for operation in the U. S. and has passed British Air Registration Board tests for 600 hours of operation between overhauls. A later version of this engine has passed ARB type tests at a take-off rating of 390 hp. (45 ins. and 3,000 rpm.).

In the Dove, the Queen 70's drive de Havilland and Hydromatic three-blade constant-speed, feathering and reversing propellers which operate anti-clockwise, designed by de Havilland for the Dove and based on the original Hamilton pitch-change operating principles. Its new reversing feature allows this propeller to be used for braking the aircraft in landing. Although the demonstrator is equipped with reversing props, use of reverse thrust is not approved by CAA until solenoids are installed on all three wheels to prevent reversing until weight is in the landing gear. These are to be installed.

An automatic aneroid boost control and fuel injection carburetion are interesting features. A throttle lever for each engine and a pitch lever for each propeller are the only power plant controls on the interesting Dove pedestal, there being no separate mixture controls since mixture is automatically controlled.

A simple fuel system is used. In each wing, inboard of the engine, are two interconnected tanks, one in front of and one behind the main spar, the two tanks in each wing totalling 102 gals. in capacity. Normally, the two tanks on either side feed their respective power units, with a cross-feed arrangement for supplying fuel to the opposite engines. Fuel is fed by a gear type pump in the injection unit. Provision is made for immersed fuel pumps.

Pneumatic System

One of the most interesting features is the Dove's pneumatic system for brakes, flaps and landing gear (there are no hydraulics on the airplane). Pneumatic rams for each of these units are operated by a duplicated compressed air system. A compressor is fitted to each engine, feeding its own storage bottle, so that all services can be operated normally in event of failure of one engine or compressor. Methynol injector bottles are fitted in each of the dual supply systems to eliminate possibility of freezing in cold climates (small amounts of water condense in the system due to temperature changes, but are of no consequence except for freezing in very cold temperatures and methynol eliminates this possibility).

In event of failure of both compressors in flight, the pressure in the storage bottles is sufficient to lower the wheels and flaps. In case pressures are lost from both compressors and storage bottles, there is an emergency air bottle which introduces pressure through separate pipelines direct to the pneumatic rams. The pneumatic brakes are operated by a thumb-type lever mounted on the pilot's control wheel. Differential control is obtained by movement of the rudder pedals. The brakes are locked for parking by pressing the thumb lever and turning a handy knob which is the hub of the control wheel.

Of special interest is the Dove's landing gear. The main struts incorporate shock absorption through rubber blocks in compression, there being no hydraulics. These rubber blocks, spaced with steel plates, provide an impressively soft action. Main landing gear legs are interchangeable. The nose gear utilizes a Lockheed air-oil strut and mounts a wheel having a twin-tread anti-shimmy tread. It is fully castoring. The nose wheel leg is

THE narco Omnigator

Model VTR-1

NEW OMNIGATOR is VHF at its very best! With all 7 VHF units in one richly styled panel, it only weighs 18½ lbs. The complete system includes omni, two-way VHF radio, localizer, power supply & marker. INVESTIGATE AND FLIGHT TEST TODAY!

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NATIONAL AERONAUTICAL CORPORATION

WINGS FIELD, AMBLER, PA.

The Man with a Mooney Is a Flying Business Man

GRANT ZICKGRAF

The Mooney M-18C cruises 130 mph. at less than 1c per mile for fuel and oil

"MOONEY'S THE BEST FOR MY BUSINESS USE," says Grant L. Zickgraf, Vice President, Zickgraf Hardwood Co., Inc., Franklin, N. C. "I have owned many airplanes but selected the DeLuxe MOONEY not because of its amazing economy or its modest price . . . but simply because it's the best airplane available for business trips in and out of the Great Smoky Mountain region where my firm operates."

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impressively sturdy with its very large diameter.

Fluid Wing De-Icing

The Dove introduces to America a unique fluid de-icing system, available as extra equipment for full wing, fin and tailplane. It makes use of a special fluid called "TKS," distributed by special porous metal strips built into the leading edge structures. It offers three different degrees or standards of de-icing control which can be selected by switches mounted on the instrument panel. The first is switched on and off and can be called "manual." The second is automatic in that the switch is left on during flight with an automatic "ice detector" starting the fluid pump into action when icing conditions are encountered. A small green light on the panel indicates when the pump is in action. The third switch is for emergency use and provides five times the normal rate of flow to deal with extreme icing conditions. A red light on the panel indicates that maximum flow is being used. No other details were immediately available on this unique system.

Extra large baggage compartments behind the cabin and beneath the cockpit offer special appeal to pilots confronted with difficulties using midget compartments in older-type airplanes. The rear compartment has 67 cu. ft. of space with a 12-sq. ft. floor area with maximum loading of 600 lbs. and the forward compartment has a 12-sq. ft. area with 22 cu. ft. of volume, maximum loading being 300 lbs. The rear baggage door, opening on the starboard side of the fuselage, measures 29 inches wide by 25.5 inches high, and the exterior door to the forward compartment measures 27 inches wide by 17.5 inches high.

Extra large windows feature the passenger cabin. The Dove we were in is an executive model, having six passenger chairs in the cabin. Two pairs face each other and the other two seats face forward. Between the facing seats on each side are walnut tables which fold neatly out of the way and have racks for cards and glasses. Each pair of facing seats can be readily converted into a bed almost six feet long by inserting a couple of aluminum rods into sockets and placing a "mattress" cushion (about the size of the chair cushion) atop the rods. It's comfortable, too.

A quickly removable bulkhead, with a door in it which works better than any airplane bulkhead door we have seen, separates the rear of the passenger cabin from the cabin door. This creates a private compartment housing a chemical toilet, with plenty of room. When the Dove is equipped for 11 occupants, this toilet and bulkhead are removed, and three chairs are fitted into the space thus available. In the 8-place executive is another novel feature—a folding lavatory with mirror and water supply.

In the Cockpit

Up front, the cockpit has several interesting features, chief of which is visibility afforded not only by the nose wheel but by the plexiglass canopy which offers a view to the rear as well as other directions. A wooden sunshade is used if shade is desired, fitting into a rack so that an air space is provided for insulation between the glass canopy and the wooden shade.

Six-foot pilots and taller will find the Dove cockpit snug. It is a little close to get into the pilot's seat, but once in it the cockpit is noticeably comfortable. Rudder pedals are adjustable to several leg dimensions with a touch of the foot and can be flipped upward and clear out of the way. The seats are also adjustable. Riding in the co-pilot's seat, it is comfortable when the rudder pedals are flipped out of the way but if they are left in position you find you're in

No. 23 in a Series Advt.

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close quarters when you attempt to move both your feet and your legs out of the way of the controls. You aren't supposed to do this, we suppose, but some people do.

The instrument panel is arranged so that all flight instruments are on a separate panel, to port, with all engine instruments on a separate panel, at center, and all radio controls on a separate panel, to starboard.

Space does not permit discussion of all interesting Dove features. It is a complete airplane, the smallest multi-engine transport meeting international airline standards for single-engine safety. It is priced at $76,200 including duty. It has been entered on the U. S. market at a time when executive aircraft are in demand, and it will be interesting to watch that expanding market's reaction to the competition injected by British ingenuity and resourcefulness. ★ ★ ★

WAR — RUSSIAN STYLE

(Continued from page 27)

tribute a like proportionate share of national resource.

Let us lay down in no uncertain terms our intention to make maximum use of our industrial power, our air power and our naval power. But by the same token we will not have our army used as a pawn in an international chess game with the champion.

And finally, let us make it crystal clear we are through with the role of a *genie in a bottle to be called forth or hustled back again at the whim of a beggar.*

All of these we can do. The Congress of the United States has the power and authority to do them. The voter and the taxpayer have the final responsibility to see that they are done. This responsibility must be accepted sooner or later. Why wait? ★ ★ ★

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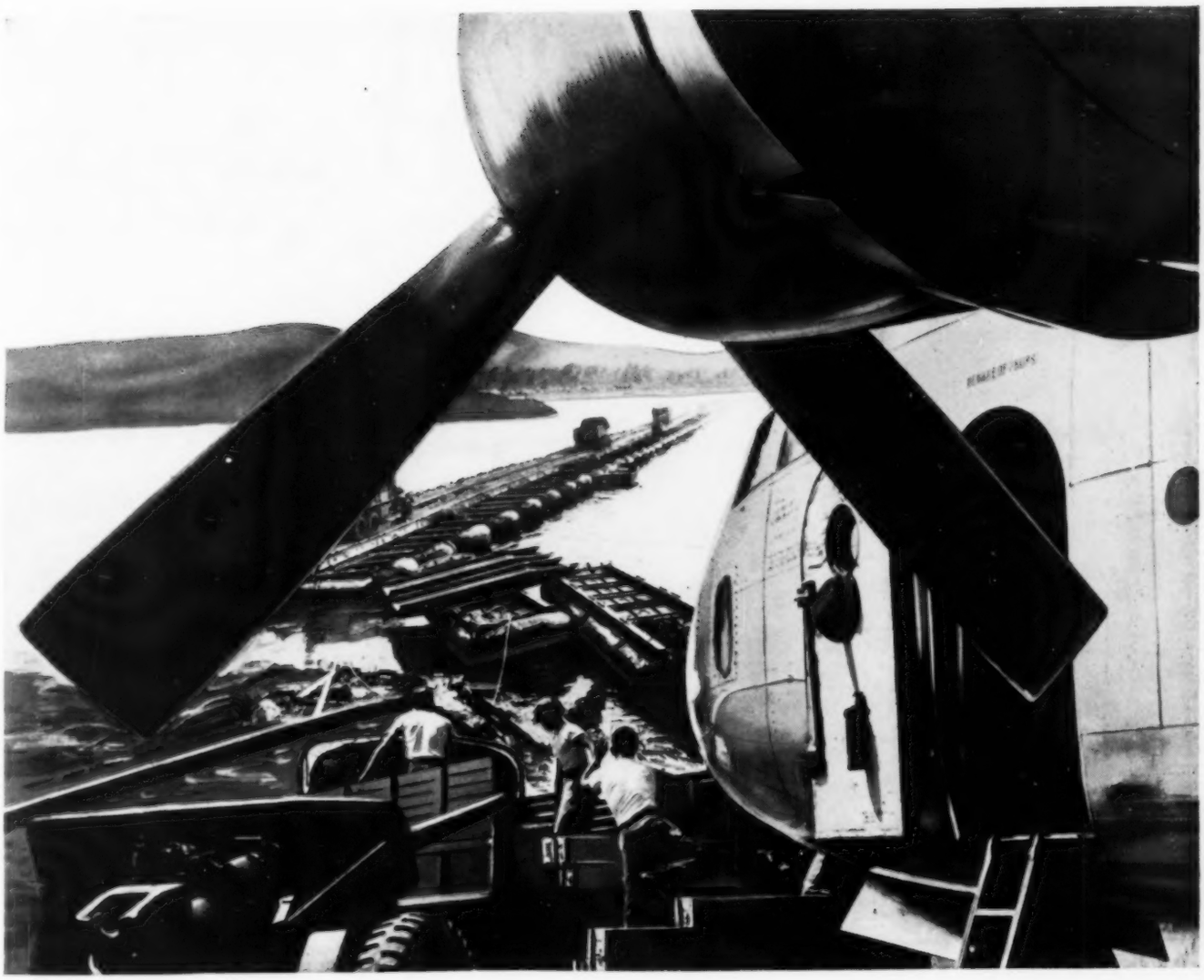

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